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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,510	01/12/2006	Yasuo Masuda	SHIGA7.036APC	8841
20995 7590 12/12/2007 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			EXAMINER CHU, JOHN S Y	
			ART UNIT 1795	PAPER NUMBER
			NOTIFICATION DATE 12/12/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com  
eOAPilot@kmob.com

## Office Action Summary

**Application No.**

10/564,510

**Applicant(s)**

MASUDA ET AL.

**Examiner**

John S. Chu

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/11/07</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This Office action is in response to the amendment of October 1, 2007 which adds new claims 6-8 and amends claim 1.

1. The rejection under 35 U.S.C. 102(b) as being clearly anticipated by MORIUMA et al (6,274,287) is **withdrawn** in view of the amendment to claim 1 specifying the molecular weight of the alkali-soluble resin.
2. The rejection under 35 U.S.C. 102(b) as being clearly anticipated by MIYAGI et al (6,187,500) is **withdrawn** in view of the amendment to claim 1 specifying the molecular weight of the alkali-soluble resin.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

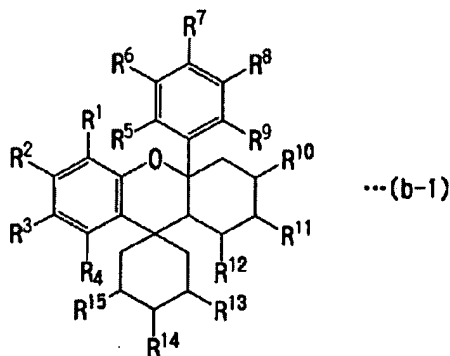
4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over UEDA et al (6,210,855) in view of UETANI et al (5,424,167 and 5,290,657).

The claimed invention is now drawn to the following:

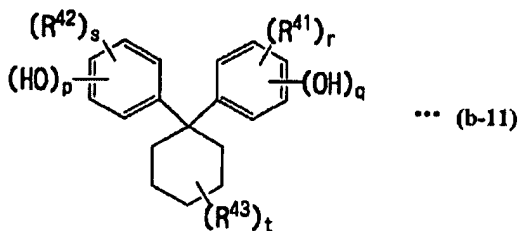
1. **(Currently amended)** A positive photoresist composition comprising:

(A) an alkali-soluble novolak resin having a weight average molecular weight of 1,000 to 50,000, in which a portion of hydrogen atoms of all phenolic hydroxyl groups are substituted with 1,2-naphthoquinonediazidesulfonyl groups[[,]]; and

(B) a dissolution promoter comprising at least one compound selected from [[a]] the group consisting of compounds represented by a general formula (b-1) and a general formula (b-11) shown below:

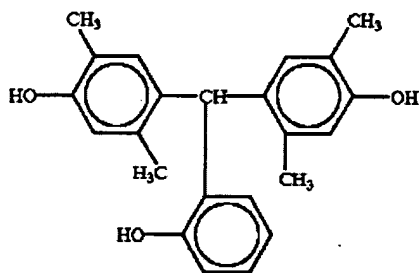


wherein, R<sup>1</sup> to R<sup>9</sup> each represent, independently, a hydrogen atom, an alkyl group, a halogen atom, or a hydroxyl group, although at least one of R<sup>1</sup> to R<sup>9</sup> represents a hydroxyl group; and R<sup>10</sup> to R<sup>15</sup> each represent, independently, a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group or an aryl group;



UEDA et al is newly cited to address the now amended claim 1 which was not considered at the time the Non-final rejection was given. UEDA et al discloses positive resist compositions

comprising a photosensitive novolak resin having a weight average molecular weight of 2,000 - 20,000 wherein 2.5 - 27% of the hydroxyl groups are replaced with 1,2-naphthoquinonediazidesulfonyl groups. This disclosure meets the claimed component (A) as claimed in claim 1. For component B, a low molecular weight aromatic compound having phenolic hydroxyl groups and 2-20 benzene rings are disclosed in UEDA et al. The non-limiting examples of the aromatic compounds are listed in column 8, line 35 - column 16, line 25. Of particular interests by the examiner is the compound of C-21 in column 11, lines 25-34 seen here:



This compound is the same low molecular weight compound (e) as found in UETANI et al (5,424,167), see column 7, lines 49-56 of UETANI et al.

UETANI et al (5,424,167) was cited in the previous Office action for disclosing a dissolution promoter of claimed formula (b-11). This reference clearly teaches the functional equivalence of four phenolic compounds as an additive for photoresist composition comprising 1,2-naphthoquinonediazidesulfonyl groups, see column 7, lines 49-56 for the representative compounds. And apparently formulae (a) - (c) in UETANI et al meet compound (b-11) as claimed. To the skilled artisan knowing the available additive phenolic compounds in the art and seeing UETANI et al ('167) one of ordinary skill would expect that any of the those

compounds listed in UETANI et al would function similarly in UEDA et al without changing the improved results of high resolution, heat resistance, dimensional control and film retention .

Likewise UETANI et al (5,290,657) disclose a phenolic dissolution inhibitor compound as an additive to quinone diazide-based photoresist compositions. The use of a aromatic compound having phenolic hydroxyl groups is directed by the art of UEDA et al such that any of the phenolic additives in the art of photoresist having the requirements as taught by UEDA et al would be expected to perform in the manner as desired wherein sensitivity high resolution and dimensional control are required. Thus the use of the phenolic additive in UETANI et al ('567) would be expected to function similarly in the composition of UEDA et al while maintaining the beneficial properties of high resolution, improved dimensional control, heat resistance and film thickness retention.

It would have been *prima facie* obvious to one of ordinary skill in the art of photoresist composition to use compounds (a) - (c) of UETANI et al in the composition of UEDA et al as the aromatic compound having 2 phenolic hydroxyl groups and reasonably expect same or similar results as disclosed in UEDA et al.

It also would have been *prima facie* obvious to one of ordinary skill in the art of photoresist compositions to use the additive compound in UETANI et al ('567) as the low molecular aromatic compound having phenolic hydroxyl groups and reasonably expect same or similar results as disclosed in UEDA et al for high resolution, improved dimensional control and film retention.

The arguments by applicant have been carefully considered, however the claims as recited are directed to a positive photoresist composition without any particular thickness and the

prior art as seen provides motivation to use such compositions for photoresists at 1 um thickness. The evidence of record appears to teach that thicker resist compositions have a different result when using the claimed invention, however that aspect is not expressed in the claims as presented.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/John S. Chu/  
Primary Examiner, Group 1700

J.Chu  
December 9, 2007